

The Role of Relationship Status Changes in College
Students' Heavy Episodic Drinking

by

Suzanne Zalewski

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Approved April 2012 by the
Graduate Supervisory Committee:

William Corbin, Chair
Leah Doane
Laurie Chassin

ARIZONA STATE UNIVERSITY

May 2012

ABSTRACT

The beginning of college is a period in which increased alcohol use often coincides with greater involvement in romantic relationships. Existing literature yields inconsistent findings regarding the influence of different relationship statuses on drinking behavior, perhaps because these studies have not accounted for recent changes in the way college students engage in dating/sexual relationships. In the current college environment, many students who define themselves as non-daters are nonetheless sexually active, a phenomenon referred to as the 'hook up' culture. The present study sought to address this issue by examining the effects of both relationship status and sexual activity on heavy episodic drinking (HED) among 1,467 college students over the course of their first three semesters. Results indicated that the effects of relationship status depended on whether or not an individual was sexually active. Non-dating but sexually active students reported rates of heavy drinking comparable to students who defined themselves as casual daters, but non-dating students who were not sexually active reported drinking behavior similar to those involved in committed relationships. Further, transitions between low and high risk relationship/sexual activity statuses were associated with corresponding changes in HED. Transitioning into a high risk status was associated with greater levels of heavy episodic drinking, whereas transitioning into a low risk status was associated with decreases in this behavior. Together, results indicate that engaging in nonexclusive dating

or sexual relationships may play an important role in the development of problematic patterns of alcohol use during the early college years. These findings have potentially important implications both for future research and for prevention and intervention efforts targeting high risk college drinkers.

This thesis is dedicated to the memory of my father, Fred Zalewski. “I
carry your heart.”

ACKNOWLEDGMENTS

I would like to thank my committee for sharing their ideas and encouraging me to think critically throughout the completion of my thesis. I would also like to thank my mother, Christina Zalewski, and my best friend, Summer Kim, for their unwavering support.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER	
1 INTRODUCTION	1
2 METHODS	12
Participants	12
Measures	12
Procedures	16
Analytic Plan	17
3 RESULTS.....	20
Preliminary Analyses	20
Sexual Activity Status and Relationship Status as Predictors of HED	21
Changes in Relationship Status and Sexual Activity as Predictors of Changes in HED	22
4 DISCUSSION.....	26
REFERENCES	38

LIST OF TABLES

Table	Page
1. Baseline Differences in Descriptive Statistics and Frequency Counts for Full Sample Providing Data During Freshman Fall, Those Eligible for Analysis 1, and the Sample in Analysis 2 .	44

LIST OF FIGURES

Figure		Page
1.	Flow Chart Illustrating Participant Enrollment, Attrition, Exclusion, and Retention for Analyses	45
2.	Heavy Episodic Drinking by Levels of Sexual Activity and Relationship Status..	46
3.	Heavy Episodic Drinking Trajectories by Relationship Status Transition Classification.	47

Chapter 1

Late adolescence and emerging adulthood are periods of self-exploration typically associated with increased alcohol use, with alcohol abuse peaking between ages 18 and 25 (SAMSHA, 2009). While moderate amounts of drinking can serve adaptive functions during these stages of development (Maggs, 1997), heavy alcohol use is extremely problematic at both the individual and societal levels. Approximately 40% of college students report heavy episodic drinking, defined as consuming four or more alcoholic drinks in the course of a sitting for women, and five or more for men (O'Malley & Johnson, 2002; Wechsler, Dowdall, Davenport, & Rimm, 1995).

This behavior has been implicated in numerous adverse consequences including blackouts, injuries, hangovers, missing classes, getting into trouble with the police, experiencing unplanned pregnancy, and spreading or contracting sexually transmitted diseases (Durkin, Wolfe, & Clark, 2005; Wechsler, Davenport, Dowdall, & Moeykens, 1994; Perkins, 2002; Chesson, Harrison, & Stall, 2003). Moreover, heavy episodic drinking leads to several negative second-hand effects for students who do not personally drink heavily. These consequences include disruption of studying, fights, insults and arguments, vandalism, physical assaults, and unwanted sexual advances (Bishop, 2000; Clapp, Shillington, & Segars, 2000; Wechsler, Lee, Kuo, & Lee, 2000).

Accordingly, heavy episodic drinking has been identified as a leading health public health concern among college students (Durkin et al., 2005).

Several environmental risk factors have been identified as contributors to heavy episodic drinking during the college years. The first year of college is an especially risky period during which many students experience a substantial increase in their heavy episodic drinking (Fromme, Corbin, & Kruse, 2008). Environmental/contextual factors that put individuals at risk for this increase include greater time spent with heavy drinking peers (Schulenberg, Wadsworth, O'Malley, Bachman, & Johnston, 1996), involvement in fraternities or sororities (e.g., Capone, Wood, Borsari, & Laird, 2007), and moving into a college dormitory and away from home for the first time (Weitzman, Nelson, & Wechsler, 2003).

In addition to increases in binge drinking, the transition to young adulthood is also a time of increased involvement in romantic and/or sexual relationships (Connolly & Johnson, 1996; Arnett, 2004). Similar to alcohol use, such relationships have potential benefits, but also pose risk for serious negative consequences. For example, the initiation of sexual relationships introduces the potential to contract sexually transmitted infections, and romantic relationships can involve partner abuse or emotional duress due to the relationship's dissolution.

In the college context, binge drinking and participation in romantic/sexual relationships commonly co-occur. A limited body of research suggests that different relationship and sexual activity statuses

are associated with varying levels of alcohol use, leading to questions about the nature of this association. Three possible explanations may explain this association. First, individual differences in an underlying trait or cultural variable may contribute both to heavy episodic drinking behaviors and relationship/sexual activity status choices. Second, heavy episodic drinking may influence individuals' sexual activity and relational patterns. Finally, entering into specific relationship/sexual activity statuses may contribute to an increase or decrease in an individual's drinking behavior.

Sensation-seeking and religiosity are two possible third variables that may account for the association between heavy episodic drinking and relationship/sexual activity status. Thus, one possible explanation is that individuals who are high on trait levels of sensation-seeking may be more likely to drink heavily and also to maintain casual dating relationships with multiple partners. Indeed, research has suggested that sensation-seeking is predictive of both alcohol use (Weitzman et al., 2003) and noncommittal sexual relationships (Bancroft et al., 2004; Paul, McManus, & Hayes, 2000) among college students.

Religious involvement may also explain variation in both relationship choices and decisions regarding drinking behavior. Research has consistently found religiosity to be inversely related to alcohol use in college students, with possible mechanisms including direct proscriptions against alcohol use in some faiths, buffering of life distress, and

participation in nondrinking activities that are church related (Gorsuch, 1995; Galen & Rogers, 2004; Wills, Yaeger, & Sandy, 2003). In addition, religiosity is negatively related to engaging in casual sexual encounters (Owen, Rhoades, Stanley, & Fincham, 2010) and sex with multiple sexual partners (Uecker, 2008). It has been shown that religiosity and sensation-seeking are relatively independent predictors of both drinking behavior (Forthun Bell, Peek, & Sun, 1999) and sexual activity (Burris, Smith, & Carlson, 2009) suggesting that they may have additive effects.

There is also considerable research to support the second possible explanation for the association between relationship/sexual activity status and heavy episodic drinking; that these constructs are causally related, with heavy episodic drinking influencing individuals' sexual activity and relational patterns. Studies using event-level data have consistently supported a relationship between alcohol use and the decision to engage in various forms of risky sex, including having multiple or casual sexual partners and having sex with a new partner (see Cooper, 2002, for a review). Further, findings from experimental research generally support a causal influence of intoxication on sexual risk-related outcomes involving indiscriminate partner selection (e.g., George & Stoner, 2000; Maisto, Carey, Carey, & Gordon, 2002).

In addition to impacting college students' sexual behaviors, heavy drinking has also been shown to influence the quality of college students' romantic relationships. Compared to low-level drinkers, students who

frequently engage in binge drinking tend to have relationships with greater levels of conflict and more frequent negative conversations, along with lower levels of intimacy (Fischer et al., 2005; Nezlek, Pilkington, & Bilbro, 1994). Plausibly, these relationships may be more likely to dissolve, shifting heavy drinking individuals into relationship statuses of single or non-exclusive dating.

Finally, it is possible that relationship/sexual activity status influences heavy episodic drinking behaviors. Among graduating college students, the “marriage effect” or transition into committed relationship statuses of marriage or engagement has been found to contribute substantially to the normative age-related decreases in alcohol use following the college years (Leonard & Rothbard, 1999; Bachman, Wadsworth, O’Malley, & Schulenberg, 1997). Similarly, among high school students, consistent involvement in a committed relationship or remaining a non-dater have been shown to be protective factors against alcohol use, while shifting into a relationship status of casually dating multiple partners leads to increases in drinking behavior (Davies & Windle, 2000).

Although these studies provide consistent evidence for the importance of relationship status as a predictor of drinking behavior, there are a number of unique features of the transition from high school to college which may impact this relationship. Young adults are transitioning into qualitatively different types of relationships (i.e., marriage or

cohabitation) from the relationships that college students and other emerging adults are typically involved in, and romantic relationships may serve a fundamentally different function in adolescence relative to early adulthood. In particular, relative to romantic relationships in middle adolescence, a much higher proportion of romantic relationships during college involve sexual intercourse (Patrick & Lee, 2010).

There are many reasons to believe that college students who are casually dating may consume greater amounts of alcohol than their single or coupled friends. They may be spending comparatively more time in large social gatherings where alcohol is available, and therefore have more opportunities to engage in heavy episodic drinking. Additionally, they may be using alcohol strategically in order to achieve the loss of inhibition they perceive as necessary for meeting new partners (Ven & Beck, 2009). Thus, the relationship status may be serving as a proxy for different behaviors and motivations that are likely to lead to excessive alcohol consumption.

Unfortunately, research on the role of relationship status in college students' drinking is quite limited. In a cross-sectional study, Pedersen, Lee, Larimer, & Neighbors (2009) examined the daily drinking of college men and women who were either single, dating, or in a committed relationship, and found that daters drank significantly greater amounts than students who were single or in a relationship. These effects were equally strong among men and women. Although this study provides

preliminary evidence for the importance of relationship status, the ability to draw conclusions about the direction of effects is limited by the use of a cross-sectional design. Moreover, cross-sectional studies do not provide the opportunity to examine the impact of changes in relationship statuses on drinking behavior. It is important to consider that romantic and sexual relationships are not static facets of college students' lives, but rather, the majority of college students shift into and out of different relationship statuses.

Recent studies by Fleming, White, & Catalano (2010) and Fleming, White, Oesterle, Haggerty, & Catalano (2010) utilized longitudinal data to examine the influence of relationship status on emerging adults' drinking behavior. The first study demonstrated that, controlling for high school drinking (selection effects), dating relationships were associated with less heavy drinking compared to single status. In the second study, the researchers found that alcohol use increased for individuals who transitioned from dating relationships to single statuses. However, "dating relationships" in these studies encompassed exclusive relationships only, and "single" relationship statuses included casual daters and non-daters. The researchers acknowledged that some single individuals may be introverts who abstain from social activities where drinking takes place, while others may be actively using drinking as a means to facilitate sexual interaction with partners of interest (Fleming,

White, & Catalano, 2010). However, their analyses did not differentiate between these two distinct types of single individuals.

Although most of the existing studies support a potential influence of relationship status on drinking behavior, a recent event level study of college students failed to find a significant association (Clapp et al., 2000). The authors found that nights on which individuals participated in dates were substantially less likely to be heavy drinking nights. However, the researchers did not specify if the dates were with casual partners or with stable partners, making it difficult to draw any conclusions about the differences in the effects of these two relationship statuses.

Although future studies of college student dating and alcohol use should seek to clearly identify specific relationship types, this is becoming increasingly difficult due to recent changes in the nature of romantic relationships within this developmental period. An important change in the dating process in late adolescence/emerging adulthood is that there are no longer clear stages or steps in dating relationships (Glenn & Marquardt, 2001; Bogle, 2009). There has been a societal shift from courtship based on formal dating to “hooking up”, where romantic/sexual interactions frequently involve party settings and the presence of alcohol. Indeed, Clapp and Shillington (2000) found that nights in which college students attended parties or large social gatherings were substantially more likely to be heavy drinking nights, suggesting that individuals who are hooking up may be a particularly high risk group for heavy episodic

drinking. Importantly, these individuals may or may not self-identify as “casual daters” on a survey despite the fact that they are actively seeking sexual or potential romantic partners and engaging in intimate sexual relations. Interviews with college students suggest that few students in these noncommittal, sexual relationships would consider their behavior to be “dating” (e.g., Bogle, 2009; Glenn & Marquardt, 2001; Ven & Beck, 2009). The term “hooking up” is more typically used in students’ self-descriptions of these interactions.

Hooking up is a relatively recent and nebulously defined concept. Early researchers conceptualized hooking up as a brief sexual encounter between two individuals who are most likely strangers or acquaintances, without the expectation of a relationship (Paul et al., 2000). More recently, researchers have expanded the definition of hooking up to encompass the engagement in physically intimate behaviors ranging from deep kissing to oral sex and intercourse outside of the context of a committed relationship (Owen et al., 2010). Studies have shown that between 50-75 percent of college students report hooking up in the past year (Glenn & Marquardt, 2001; Paul et al., 2000), and social scientists now characterize this behavior as the dominant way for college-aged men and women to get together and initiate sexual and romantic relationships (Bogle, 2009).

Given the complexities of the modern “hookup culture” among college-aged students, it is critical to account for sexual activity in the

absence of dating behavior when examining the association between relationship status and drinking behavior. Further, longitudinal studies are needed to determine the direction of effects between relationship status and drinking outcomes, controlling for individual differences in possible third variables that might account for their relation (e.g. sensation-seeking personality traits and religiosity). The goal of the present research is to further understand the role of transitions between relationship and sexual activity statuses (not dating, casually dating or “hooking up”, or in a monogamous relationship) in predicting heavy episodic drinking during the first year of college. Understanding if transitions between different types of romantic/sexual relationships impact an individual’s risk for heavy alcohol use may inform effective risk management and harm reduction policies targeting college students at high risk for heavy drinking.

The current study sequentially tested two hypotheses regarding the relations between relationship/sexual activity status and drinking behavior. The first hypothesis was that there would be an interaction between sexual activity and relationship status in predicting heavy episodic drinking over the first three semesters of college, such that single individuals who were sexually active would report levels of HED similar to casually dating individuals, while single individuals who were not sexually active would report levels of drinking similar to those involved in a committed relationship.

Based on the results of these analyses, participants were classified into “high risk” and “low risk” categories to facilitate examination of the effects of changes in relationship status on heavy episodic drinking. It was hypothesized that individuals who entered college as part of a committed relationship or as non-daters, and shifted into a relationship status of casual dating/hooking up during their first semester of college, would experience a greater increase in heavy episodic drinking over the first year of college than their peers who were stably non-dating/not sexually active or in a committed relationship. In addition, individuals who entered college as casual daters/hooking up but became involved in committed relationships or became non sexually-active non-daters were expected to report smaller increases in their heavy episodic drinking over the first year of college compared to their peers who remained involved in casually dating/hooking up statuses. These differences were expected to be significant even after controlling for individual differences in religiosity and sensation-seeking. Finally, we hypothesized that changes in relationship status from the first to the second semester would prospectively predict changes in drinking between the second and third semester of college.

Chapter 2

METHODS

Participants

The analyses utilized data from freshman fall, freshman spring, and sophomore fall semesters from a sample (N=2245) of participants who completed bi-annual surveys beginning in the summer before college matriculation and continuing through the college years. Data were provided by 2077 participants at wave 2, with 2025 and 1896 participants completing waves 3 and 4, respectively. Only participants who a) reported one relationship status at each of the three waves, and b) provided complete data on all of the independent and dependent variables of interest were included in analysis 1. This resulted in a sample size of 1467. For analysis 2, the sample was further restricted to participants who reported the same relationship status at waves 3 and 4, for the purposes of determining if changes in relationship status from wave 2 to wave 3 predicted HED changes from freshman to sophomore year of college. The rationale for this approach is provided in more detail in the description of the relationship status change measure. After removal of participants based on these criteria, 862 participants remained. For a summary of participant attrition and criteria-based exclusion at each time point, see Figure 1.

Measures

Relationship status. Relationship status at each time point was

assessed by a single question, which asked participants to indicate which relationship status(es) applied to their situation over the past three months: single, dating but not exclusively, dating exclusively, engaged, married, or other. Participants who reported being “married” or “engaged” were excluded from the analyses, based on the very small number of participants who reported these relationship statuses (12 and 0, respectively, at wave 2). Participants who reported “other” but included an explanation that allowed them to be placed into one of the three relationship statuses were coded as such; however in cases where their “other” explanation was ambiguous, they were excluded from analyses. Participants who endorsed multiple relationship statuses at any of the three time points were not included in the analyses, as there was no way of knowing the timing and direction of their status shifts. For example, in the case of an individual who reported both being “single” and “dating exclusively”, we had no way of determining whether the individual experienced a transition into or out of a committed relationship.

Sexual activity. Sexual activity status was assessed at each time point with three questions, which asked for the total number of vaginal, oral, and anal sexual partners over the last three months. A composite score was calculated by summing these three variables, and a dichotomous variable was computed to classify participants as either “sexually active” or “not sexually active” at each time point.

Changes in status. For analyses that examined the effects of relationship/sexual activity status changes on drinking behavior, only individuals who reported the same status between waves three and four were retained. This approach was utilized to enable observation of changes in heavy episodic drinking over the course of the first year of college that resulted from only one relationship status transition, versus more complex patterns of drinking changes that might occur when multiple relationship status transitions take place.

Based on the results of analysis 1, participants were grouped into “high risk” or “low risk” relationship statuses. High risk statuses consisted of the three relationship/sexual activity status groups with the highest levels of HED, and low risk status groups consisted of the three groups with the lowest frequency of HED. A variable was created to represent the different patterns of relationship/sexual activity status transitions across the first two waves of data. Four patterns were coded: stably low risk, stably high risk, a shift from a low to high risk status, or a shift from a high to low risk status.

Sensation-seeking. Sensation-seeking was assessed at wave 1 with the Zuckerman-Kuhlman Personality Questionnaire (Zuckerman, Kuhlman, Teta, Joireman, & Kraft, 1993). The sensation-seeking subscale of the ZKPQ consists of 11 items. Sample items include, “I like doing things just for the thrill of it and I sometimes do ‘crazy’ things just for fun.” No statements used in the subscale specifically referred to alcohol

use. All items are on dichotomous true/false scales. In the present study, the sensation-seeking scale demonstrated good internal consistency (cronbach's $\alpha=.81$).

Religiosity. An index of religiosity was formed using the sum of two items assessing different aspects of this construct. The first item was drawn from a measure of values, and asked participants to indicate how important it is that they observe religious beliefs or cultural traditions using a 5-point Likert scale (1= "not at all important" and 5 = "very important to me"). The second item measured religious attendance and asked participants to select the average number of hours per week they spent at religious services, coded on a 5-point scale ranging from 0 to more than 20. Both items were assessed at wave 1.

Heavy episodic drinking. Frequency of heavy episodic drinking was determined by participants' responses to a question about how many times they consumed five (four for women) or more drinks in a single sitting, over the past three months. This variable was log-transformed to account for a positively skewed distribution. Approximately 44% of students reported at least one episode of heavy episodic drinking at wave 2, a proportion that is consistent with a review of national college drinking surveys which found HED rates of approximately 40% despite varied time frames and sampling schemes used by researchers (O'Malley & Johnson, 2002).

Procedures

Data were collected as part of “The UT Experience!”, a longitudinal study on drinking and other risk behaviors during the transition from high school to college and throughout the college years. Students completed biannual surveys by accessing a secure Web site (DatStat, Seattle, WA), where they provided informed consent and completed the initial survey. This first wave of data was collected during the summer before high school, and assessed behaviors and social-cognitive influences during the last 3 months of students’ senior year in high school. Demographic information, family history and personality variables were also included at the first assessment point only. The present analyses utilized demographic and personality variables from the high school assessment and drinking and relationship data from freshman year of college (waves 2 and 3) and sophomore fall semester (wave 4).

Information about the study was provided to a sample of 5,662 incoming students during six orientation sessions, constituting 88.6% of the eligible incoming freshman class of 2004. A total of 4,832 (75.6%) students who met inclusion criteria (unmarried first-time college students) and provided complete contact information were randomly assigned to one of three study conditions. The biannual assessment condition, on which the current data are based, included 3,046 participants. The other two conditions included a) assessments during high school and Year 4 of college only and b) a Year 4 assessment only to allow for the assessment

of the impact of repeated testing on the outcomes. Of the 3,046 randomized to the longitudinal sample, a total of 2,245 (73.7% of the randomized sample) incoming students provided informed consent and completed the high school survey. Participants were re-contacted at the end of each semester of college and asked to complete a similar survey (though the fall surveys were abbreviated relative to spring surveys). Reminder emails were sent by the web-administrator if the participant did not complete the survey within 10 days.

Analytic Plan

A series of analyses of covariance (ANCOVA) models were used to test the study hypotheses. Prior to testing the ANCOVAs, Levene's test of homogeneity was used to determine if the assumption of homogeneity of variance was met. Levene's test is preferable when data are not normally distributed because it is able to identify heterogeneity even when the data are significantly skewed (Tabachnick & Fidell, 2007).

A 3x2 ANCOVA was used to test for an interaction between relationship status and sexual activity during freshman fall in predicting heavy episodic drinking over the course of all three waves of data. We anticipated an interaction between relationship status and sexual activity with single individuals who were sexually active reporting levels of drinking similar to the casual daters, and single individuals who were not sexually active reporting levels of drinking similar to individuals in committed relationships. Follow-up contrasts were conducted to test these a priori

hypotheses. Sensation-seeking, religiosity, and gender were included as covariates, and interactions between these variables and relationship status and sexual activity were explored as well.

Based on the results of these analyses, participants were grouped into “high risk” or “low risk” relationship statuses. After regrouping individuals into high risk and low risk relationship/sexual activity categories, variables were created to represent the different patterns of movement between relationship statuses. Four types of status stability/change patterns were possible: stably low risk, stably high risk, shifting from low to high risk, or shifting from high to low risk.

To test hypothesis 2, we conducted a 4 (status change category) x 3 (time) ANCOVA to determine the effects of changes in relationship/sexual activity status on the frequency of HED episodes from freshman to sophomore year. Two planned comparisons were tested. The first compared the trajectories in heavy episodic drinking between stably low risk participants and those who reported transitioning from low to high risk statuses between the first two waves of data. The second contrast compared the trajectories of heavy episodic drinking between those who were stably high risk and those who began in a high risk dating/sexual activity category but shifted into a low risk category. Sensation-seeking, religiosity, and gender were included as covariates, and interactions between these covariates and relationship/sexual activity status patterns were explored.

Finally, to test hypothesis 3, a more stringent series of within subjects ANCOVAS provided a conservative test of whether relationship status changes predicted changes in HED trajectories between the second and third semesters of college. By restricting the outcomes to spring of freshman year and fall of sophomore year, we were able to examine changes in drinking that clearly occurred after the relationship status changes (which occurred between fall and spring of freshman year).

Chapter 3

RESULTS

Preliminary Analyses

Examination of the distributions of the variables found that heavy episodic drinking was positively skewed at each time point. Therefore, logarithmic transformations were computed for each heavy episodic drinking variable. A series of ANCOVA models containing the independent variables, one of the covariates, and the IV/covariate interactions were then used to test homogeneity of the regression slopes of heavy episodic drinking at time 1 on the set of covariates, as suggested by Tabachnick and Fidell (2007). There were no significant interactions between gender, religiosity, or sensation-seeking and either relationship status or sexual activity (all p 's > .05). The lack of interactions indicated that the assumption of homogeneity of regression coefficients was met. Further, these analyses precluded the need to include IV by covariate interactions in the ANCOVAs used to test the primary study hypotheses.

To test the extent to which the subsample included in analysis 1 was representative of the larger sample who provided data at time 1, analyses were conducted to compare the 1467 individuals included in the first set of analyses with those who did not meet inclusion criteria. The individuals who were excluded were more likely to be male, ($\chi^2 = 10.37$, $df = 1$, $p = 0.001$), and reported higher average levels of sensation-seeking at time 1; $F(1,1991) = 15.5$, $p < .001$).

Sexual Activity Status and Relationship Status as Predictors of HED

The first set of hypotheses was tested using an ANCOVA with two between-subjects variables (sexual activity and relationship status), one within-subjects variable (time), and interactions for all combinations of independent variables. The model also included the main effects of the covariates (gender, religiosity, and sensation-seeking). A main effect of time was found, such that the average frequency of HED increased from fall of freshman year to fall of sophomore year, $F(1,1458) = 11.777$, $p = .001$. Of the covariates, both religiosity, $F(1,1458) = 5.794$, $p = .016$, and sensation-seeking $F(1,1458) = 41.316$, $p < .001$, accounted for significant variance in heavy episodic drinking, with lower levels of religiosity and higher levels of sensation-seeking associated with higher levels of HED. Gender was not significantly related to HED ($p > .05$).

Controlling for the covariates, a significant interaction between sexual activity status and relationship status was found (See Figure 2 for a graphical depiction). Among individuals who were not sexually active, there was a simple main effect of relationship status; $F(2,1458) = 18.347$, $p < .001$. Post hoc comparisons using Tukey's Honestly Significant Difference Test showed that casual daters reported a significantly greater number of heavy episodic drinking occasions than individuals who were single, $t(1458) = .182$; $\eta^2 = .06$ or in committed relationships, $t(1458) = .248$, $\eta^2 = .11$; both p 's $< .001$. The difference between the HED frequencies of single participants and those who were in exclusive dating

relationships was marginally significant, $t(1458) = .324$, $p = .05$, $\eta^2 = .01$ with those in committed relationships reporting slightly lower levels of HED.

In contrast to the results among those who were not sexually active, results among sexually active students showed that single participants engaged in similar levels of HED to those who were casually dating, $t(1458) = .032$, $p > .05$. Sexually active individuals who were in committed relationships reported less heavy episodic drinking than either casual daters, $t(1458) = .324$, $\eta^2 = .10$, or single individuals, $t(1458) = .293$, $\eta^2 = .11$; both p 's $< .001$.

Changes in Relationship Status and Sexual Activity as Predictors of Changes in HED

The second set of analyses examined how transitioning between low risk and high risk relationship/sexual activity statuses influenced changes in heavy episodic drinking over time. As discussed previously, the results from the first set of analyses formed the basis for identifying relationship/sexual activity status combinations as high or low risk for engagement in heavy episodic drinking. Consistent with prior studies of relationship status effects on drinking behaviors, casual daters were considered a high risk group, and people in committed relationships were considered a low risk group (Pedersen et al., 2009; Fleming, White, & Catalano, 2010), regardless of whether or not they were sexually active. Our study differed from previous studies by differentiating single

individuals as high risk or low risk based on their sexual activity patterns. The initial analysis demonstrated that single individuals who were not sexually active engaged in low levels of HED that were similar to levels reported by individuals in committed relationships, whereas single individuals who were sexually active displayed high levels of HED, comparable to levels reported by casual daters. Thus, participants who were single and not sexually active were classified as low risk, whereas single and sexually active individuals were classified as high risk.

A variable was created to represent the different patterns of relationship/sexual activity status transitions across the first two waves of data. Four patterns were possible: stably low risk (L-L), stably high risk (H-H), shifting from a low risk status to a high risk status (L-H), or shifting from a high risk to a low risk status (H-L). As we were interested in examining the effects of specific patterns of status changes on drinking trajectories across three semesters, only individuals who reported the same status between the last two time points were retained. This was necessary to eliminate confounds introduced by multiple relationship status changes.

Based on this criterion, a total of 862 individuals were retained for the second set of analyses, with 623 classified as L-L, 60 L-H, 85 H-L, and 94 H-H (see Table 1 for means and standard deviations of the study variables for both the full sample used in the first analysis and the subsample eligible for the second analysis). Additional analyses were

conducted to compare the individuals retained with those who were excluded due to additional status changes between the second and third semesters. The individuals who were excluded from the second set of analyses were more likely to be in non-committed relationships, ($\chi^2 = 6.72$, $df = 2$, $p = 0.035$), and reported higher average levels of HED at time 2; $F(1,1214) = 8.70$, $p < .001$).

To test the second set of hypotheses, a within-subjects ANCOVA was performed, with relationship transition pattern as the between-subjects independent variable and HED frequency over the first three semesters of college as the within subjects dependent variable. Two post hoc planned contrasts were conducted to compare the HED trajectories of specific groups: L-L compared with L-H individuals, and H-H compared with H-L individuals. These contrasts were designed to test the effects of transitioning into a high risk status and transitioning into a low risk status, respectively. To maintain consistency with the previous set of analyses, religiosity, gender, and sensation-seeking were included as covariates.

As in the first set of analyses, interactions between the independent variable and covariates were tested for but found to be non-significant. Both religiosity, $F(1,855) = 4.89$, $p = .027$, and sensation-seeking, $F(1,855) = 9.40$, $p < .001$, accounted for significant variance in heavy episodic drinking, with the same direction of effects reported in the first analysis. Once again, gender was not related to HED ($p > .05$) controlling for the effects of religiosity and sensation-seeking.

After controlling for covariates, there was a significant main effect of relationship transition pattern, $F(3, 855) = 64.569, p < .001$. However, this main effect was qualified by an interaction with time, $F(3, 855) = 3.44, p = .01$. Planned comparisons showed support for the two a priori hypotheses. Relative to their counterparts who remained in low risk relationship statuses, individuals who shifted from low to high risk statuses showed greater increases in heavy episodic drinking over time, $F(1, 678) = 8.785, p = .003, \eta^2 = .013$. In addition, among individuals who began college in high risk dating statuses, those who shifted into low risk dating statuses showed small decreases in HED across time compared to substantial increases in HED among individuals who remained in high risk relationship statuses, $F(1, 174) = 5.194, p = .024, \eta^2 = .029$. Figure 3 displays the trajectories of all four status-change groups over the first three semesters of college.

To determine whether changes in relationship status predicted changes in HED that were clearly prospective, we conducted an ANCOVA with relationship status transition category predicting changes in HED behavior from time spring of freshman year to fall of sophomore year, controlling for religiosity, gender, and sensation-seeking. Results were not significant for either planned comparison. L-H individuals did not differ from L-L individuals in their HED trajectories, $F(1, 678) = .363, p = .163, \eta^2 = .011$, and H-L students did not differ from H-H individuals, $F(1, 174) = 1.960, p = .547, \eta^2 < .001$; see Figure 3.

Chapter 4

DISCUSSION

The current study sought to clarify contradictory findings in the literature regarding the association between romantic relationship status and drinking behaviors. Based on a growing body of evidence that identifies 'hooking up' as an integral aspect of campus party culture, we hypothesized that the effects of relationship status on heavy episodic drinking would depend on whether or not single individuals were sexually active. We further hypothesized that changes in relationship status would impact HED, such that shifting into a committed relationship or a non-dating/non sexually active status would protect against heavy drinking, whereas transitioning into a casual dating or hook up status would increase risk for HED.

Consistent with this hypothesis, analyses suggested that the effects of relationship status were contingent on whether or not an individual was sexually active. Compared to individuals involved in casual dating, those who were single and not sexually active upon entering college demonstrated lower levels of HED across the first three semesters, similar to individuals involved in committed relationships. However, being single and sexually active was associated with levels of heavy episodic drinking that matched those of casual daters.

Significant effects of relationship status transitions were found as well. Compared to increases in HED among individuals who were

consistently casually dating or single and sexually active across all three semesters, those who transitioned from these statuses to either a non-dating/non sexually active status or a committed relationship showed small decreases in HED. Additionally, compared to students who remained non-daters or were consistently involved in committed relationships, those who shifted into single/sexually active or casual dating statuses displayed greater increases in heavy drinking.

Using a more conservative test which examined the effects of relationship status changes during freshman year on changes in HED from freshman spring to sophomore year demonstrated a very similar pattern of findings, though the effects did not reach statistical significance. These results suggest that the impact of a relationship status change on drinking behavior is strongest around the time of the transition. Although the effects were most apparent initially, the different trajectories based on relationship status changes were linear, suggesting that the changes that took place following relationship status shifts were maintained and not simply temporary deviations from high or low risk trajectories. Stated another way, individuals who shifted into high risk statuses departed from the trajectories of their stably low risk peers during the semester immediately following the status change, and the higher risk trajectory of this group persisted through sophomore year. Similarly, individuals who shifted into low risk statuses departed from the trajectories of their stably

high risk peers during the following semester, and continued on this lower risk trajectory through sophomore year.

These findings have important implications both for future research on relationship statuses and drinking behavior and for efforts to reduce heavy drinking among college students. Researchers who are interested in measuring and studying the influence of relationship status on students' health behaviors should take sexual activity status into account when defining status categories. Grouping single individuals who are sexually active with those who are not may lead to differences in observed patterns of results depending on which sexual activity status group comprises the majority. As nonexclusive statuses such as 'hooking up', 'seeing each other', and 'friends with benefits' (Bogle, 2009; Bison & Levine, 2009) become increasingly normative among college students, the need to define various health risks associated with these statuses becomes increasingly important.

From an applied perspective, these findings draw attention to the high level of risk for heavy drinking among individuals who are dating non-exclusively or engaging in casual sexual behavior. Students who entered college already participating in casual dating or casual sexual relations and who continued these behaviors during the first three semesters of college engaged in the highest levels of HED across all waves, and also showed steeper trajectories (e.g. greater increases) of heavy alcohol use compared to the relatively flat or declining trajectories of students who

participated in other relationship patterns. These results suggest that students engaged in casual sexual or dating relationships may be an appropriate group to target for preventive interventions at the beginning of college.

Additionally, the results from the analyses of relationship status transitions indicate that a substantial proportion of college students undergo one or multiple status changes during the early semesters of college, and that these transition events can serve to increase or decrease risk for HED. Of the 1794 students who participated in the first four waves of the study, 43% reported more than one relationship/sexual activity status. The frequency of relationship status changes observed in this study is consistent with previous research on college freshmen's attitudes and behaviors regarding romantic and sexual partnering, which suggests that this time period may be a normative stage of instability and experimentation that underlies concurrent increasing substance use and the exploration of multiple relationships (Arnett, 2005; Fleming, White, & Oesterle et al., 2010). However, the present study demonstrates that a more complex connection exists between the status instability and drinking that characterize freshman year, as shifting into committed relationships or non dating/non sexually active statuses was associated with decreases in HED. The findings as a whole, then, support the broader notion that establishing hook up relationships or casual dating

relationships may play a critical role in the development of problematic patterns of alcohol use during the early college years.

Although the results have important methodological and practical implications, there are several limitations that must also be considered. First, the sample consisted of undergraduate students at a single southwestern public university; therefore it is not possible to generalize to the larger population of American college students with certainty. Results may vary across geographic regions or on campuses that lack Greek organizations, as students in the Northeast and on campuses where Greek organizations are prominent tend to drink more than their counterparts at other institutions (NIAAA, 2002). Additionally, it is possible that students in religious-affiliated or single-gendered schools may report a lower frequency of hooking up and/or heavy drinking, due to campus regulations or campus cultures less tied to alcohol use. This seems unlikely, however, as interview data from faith based and state universities revealed no differences among the two student bodies in rates of "hooking up" or subjective experiences of these acts (Bogle, 2009).

Another limitation is that the present analyses do not allow us to make confident statements about the associations between alcohol use and romantic attachments within specific racial and sexual minority groups. While approximately half of the sample comprised ethnic minority students, with substantial proportions of Hispanic and Asian Americans, racial differences were beyond the scope of this paper and comparisons

among different groups were not made. As research suggests that Caucasian students engage in elevated levels of binge drinking and hooking up compared to other ethnic groups (Wechsler et al., 2002; Owen et al., 2010), future research should explore whether the association between relationship status and heavy alcohol use differs across particular ethnic groups. Sexual orientation is another potentially important variable that was not included in the analyses. Since previous studies have shown that gay and bisexual males experience greater increases in drinking over the college transition than do heterosexual students (Hatzenbuehler et al, 2008), an important endeavor for future studies is to determine the extent to which the association between alcohol use and relationship statuses varies based on sexual orientation.

It is also important to note that the self-report measures used in this study did not capture several important aspects of relationships and sexual activity that may affect how these variables relate to drinking behaviors. Our analyses may therefore over-generalize across fundamentally different experiences within relationship and sexual activity status categories. For example, we were not able to determine whether students who underwent breakups did so by their own choice or were rejected by their partners. This distinction may lead to heterogeneity of HED patterns within the status change class of “low-high” individuals. Similarly, regarding sexual activity, there is no way of knowing whether or not the activity reported by each student was consensual. This may

contribute to variability in drinking behaviors within students who shifted into high risk statuses based on the occurrence of unwanted or unplanned sexual activity. Another possible source of variability within the data relates to additional relationship changes that may have occurred but were not captured in the surveys. Based on the items assessing relationship status, there is no way to know if a person who reported being stably in a relationship was in the same or different stable relationships across time. While previous research has shown that the practice of serial monogamy, in which students engage in consecutive exclusive, short-term relationships, is quite common (Foxman, Newman, Percha, Holmes, & Aral, 2006), there is also evidence suggesting that switching partners is not associated with increases in drinking among young adults (Fleming, White, & Oesterle et al., 2010).

Finally, because the data were correlational, the results do not permit conclusions about causal influence of relationship/sexual activity status changes on heavy episodic drinking behaviors. Although we controlled for third variables that are known to contribute to both drinking behavior and relationship status, there may be other third variables not examined that factor into the observed relationship. Possible third variables that were not accounted for include affiliation with heavier drinking peers, low self-regulation, and high levels of positive urgency (Cyders & Smith, 2007). Further, due to the manner in which the data were collected we could not determine the exact point during freshman fall

semester when the relationship status changes occurred and examine subsequent changes in drinking behavior. Thus, our analyses suggest that changes in HED behavior occur near the time of relationship status transitions, but it is impossible to know the exact temporal sequencing of drinking escalation and status changes. Future research may utilize the method of ecological momentary assessment (EMA) or daily diary approaches to clarify the timing of drinking changes relative to relationship status changes. Such approaches would also have the advantage of capturing motives and emotions prior to and following status changes and proximal to drinking episodes.

Although the inability to determine the exact timing of relationship status changes is certainly a limitation, there are conceptual reasons why the exact timing of these changes may not be critical. Presumably, the relationship status transition itself is not the direct cause of changes in drinking behaviors, but rather, is a more distal influence that contributes to a combination of more proximal social and motivational factors believed to directly influence drinking. These changes in social goals and behaviors are expected to occur following entry into a new status, but may also occur immediately prior to the status change, depending on the individual and the context in which the status change occurred. For example, an individual who is considering breaking up with a significant other may begin spending increased time at social events where alcohol is served in an effort to meet new prospective partners. Similarly, a pair of students

who are approaching exclusive dating may begin spending more weekends getting to know each other at restaurants or participating in shared hobbies, activities that are less likely to be associated with heavy drinking.

Based on limited previous literature, we believe that students who are hoping to meet potential sexual partners deliberately spend more time in bars and large social gatherings where alcohol is served and also where potential hook up partners may be found. However, an alternative explanation for the findings is that students who shift into a casual dating status may increase their drinking as an effort to cope with the dissolution of a romantic relationship or rejection by a partner of interest. It seems likely that both motives may operate among college students and perhaps within the same individual across situations.

Future qualitative studies explicitly exploring students' motivations for engaging in heavy drinking across different types of relationships are an important research endeavor for understanding the mechanisms through which relationship status changes contribute to changes in drinking behavior. At the same time, there are a number of well-established risk factors that might be examined as potential mediators of the effects of relationship status in quantitative studies. Examples include drinking motives and exposure to drinking contexts. Understanding potential mediators is critical as different mediating influences might suggest potentially different types of interventions. For example,

interventions may focus on developing skills in initiating dialogue and expressing interest with potential partners, or might involve techniques for coping with disappointment due to failed attempts to develop casual or serious relationships.

A final limitation worth noting is that the sample included in analyses of the effects of relationship status transitions on HED was shown to be a lower risk sample than those who underwent additional relationship status changes between the freshman and sophomore year. Therefore, these findings presumably represent a conservative estimate of effects. Clarifying the role of single relationship status transitions was an essential step for future studies examining how multiple relationship status transitions may impact HED. Several interesting questions surround the larger patterns of relationship status changes, such as whether relationships still serve the same protective function for individuals who frequently cycle in and out of them, and whether hook ups or casual dating relationships become less associated with risk when partners become involved in “friends with benefits” statuses or other arrangements where encounters are more certain. Future research should also seek to examine potential reciprocal relationships between alcohol use and status changes, and to study these associations across broader stretches of time. As noted earlier, heavy drinking in the context of a relationship can lead to conflict between partners and cause the relationship to dissolve (Fischer et al., 2005), and it is also possible that negative consequences

associated with heavy drinking in hook up scenarios may propel individuals to seek refuge in intimate relationships. In addition to reciprocity, it is important to examine whether the pattern of results in this study replicate in relationship changes that take place in the later stages of college when some students may begin the “maturing out” process.

Finally, factors that moderate the riskiness of a casual dating or hook-up status should be explored. Cross-sectional research has suggested that engaging in thoughtful decision-making with regard to noncommittal sexual relationships may serve as a protective factor against heavy episodic drinking, particularly for women (Owen & Fincham, 2011). Other factors that may also influence the role of casual dating statuses in drinking behavior, like self awareness, exclusivity goals, and relationship-contingent self worth, should also be investigated.

Despite the aforementioned limitations, the current study makes an important contribution in clarifying existing literature on the role of relationship statuses in college student drinking by distinguishing among the types of dating and sexual relationships in which students engage. In addition, this study elucidates the temporal sequencing of relationship status changes and heavy drinking changes. We found that transitions into casual dating or hook up relationships led to an increase in HED, whereas transitions out of casual dating or hook up relationships led to a decrease in HED. Together these findings suggest that hooking up and nonexclusive dating behavior may play a critical role in the development of

risky patterns of alcohol use during the early college years. Future research is needed to uncover the specific psychosocial and motivational mechanisms that contribute to increased drinking among students who participate in the “hook up culture”.

REFERENCES

- Arnett, J. (2004) *Emerging adulthood: The winding road from late teens through the twenties*. Oxford: Oxford University Press.
- Bachman, J. G., Wadsworth, K. N., O'Malley, P. M., & Schulenberg, J. (1997). Marriage, divorce, and parenthood during the transition to young adulthood: Impacts on drug use and abuse. In J. Schulenberg, J. L. Maggs & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 246-279). New York: Cambridge University Press.
- Bancroft, J., Janssen, E., Carnes, L., Goodrich, D., Strong, D., & Long, J. S. (2004). Sexual activity and risk taking in young heterosexual men: The relevance of sexual arousability, mood, and sensation-seeking. *Journal of Sex Research*, 41(2), 181-192. doi:10.1023/A:1026041628364
- Bishop, J. B. (2000). An environmental approach to combat binge drinking on college campuses. *Journal of College Student Psychotherapy*, 15(1), 15-30. doi:10.1300/J035v15n01_03
- Bisson, M. A., & Levine, T. R. (2009) Negotiating a friends with benefits relationship. *Archives of Sexual Behavior*, 38(1), 66-73. doi:10.1007/s10508-007-9211-2
- Burris, J. L., Smith, G. T., & Carlson, C. R. (2009). Relations among religiousness, spirituality, and sexual practices. *Journal of Sex Research*, 46(4), 282-289. doi:10.1080/00224490802684582
- Bogle, K. A. (2009). *Hooking Up: Sex, Dating, and Relationships on Campus*. New York: NYU Press.
- Capone, C., Wood, M. D., Borsari, B., & Laird, R. D. (2007). Fraternity and sorority involvement, social influences, and alcohol use among college students: A prospective examination. *Psychology of Addictive Behaviors*, 21(3), 316-327. doi:10.1037/0893-164X.21.3.316
- Chesson, H. W., Harrison, P., & Stall, R. (2003). Changes in alcohol consumption and in sexually transmitted disease incidence rates in the United States: 1983-1998. *Journal of Studies on Alcohol*, 64(5), 623-630.

- Clapp, J. D., Shillington, A. M., & Segars, L. B. (2000). Deconstructing contexts of binge drinking among college students. *The American Journal of Drug and Alcohol Abuse*, 26(1), 139-154. doi:10.1081/ADA-100100596
- Cooper, M. L. (2002). Alcohol use and risky sexual behavior among college students and youth: Evaluating the evidence. *Journal of Studies on Alcohol. Special Issue: College Drinking, what it is, and what do to about it: Review of the State of the Science, Suppl14*, 101-117.
- Connolly, J. A., & Johnson, A. M. (1996). Adolescents' romantic relationships and the structure and quality of their interpersonal ties. *Personal Relationships*, 3, 185-195. doi:10.1111/j.1475-6811.1996.tb00111.x
- Cyders, M. A., & Smith, G.T. (2007). Mood-based rash action and its components: *Positive* and negative urgency. *Personality and Individual Differences*, 43, 839-850. doi:10.1016/j.paid.2007.02.008
- Davies, P. T., & Windle, M. (2000). Middle adolescents' dating pathways and psychosocial adjustment. *Merrill-Palmer Quarterly: Journal of Developmental Psychology*, 46(1), 90-118.
- Durkin, K. F., Wolfe, T. W., & Clark, G. A. (2005). College students and binge drinking: An evaluation of social learning theory. *Sociological Spectrum*, 25(3), 255-272. doi:10.1080/027321790518681
- Fischer, J. L., Fitzpatrick, J., Cleveland, B., Lee, J., McKnight, A., & Miller, B. (2005). Binge drinking in the context of romantic relationships. *Addictive Behaviors*, 30(8), 1496-1516. doi:10.1016/j.addbeh.2005.03.004
- Fleming, C. B., White, H. R., & Catalano, R. F. (2010). Romantic relationships and substance use in early adulthood: An examination of the influences of relationship type, partner substance use, and relationship quality. *Journal of Health and Social Behavior*, 51(2), 153-167. doi:10.1177/0022146510368930
- Fleming, C. B., White, H. R., Oesterle, S., Haggerty, K. P., Catalano, R. F. (2010). Romantic relationship status changes and substance use among 18-to 20-year-olds, *Journal of Studies on Alcohol and Drugs*, 71: 6, 847-857. doi:10.1177/0022146510368930

- Forthun, L. F., Bell, N. J., Peek, C. W., & Sun, S. (1999). Religiosity, sensation-seeking and alcohol/drug use in denominational and gender contexts. *Journal of Drug Issues*, 29(1), 75-90.
- Foxman, B., Newman, M., Percha, B., Holmes, K. & Aral, S. (2006). Measuring sexual partnerships: Lengths, gaps, overlaps, and sexually transmitted infection. *Sexually Transmitted Diseases*, 33, 209-214. doi:10.1097/01.olq.0000191318.95873.8a
- Fromme, K., Corbin, W. R., & Kruse, M. I. (2008). Behavioral risks during the transition from high school to college. *Developmental Psychology*, 44, 1497-1504. doi:10.1037/a0012614.
- Galen, L. W., & Rogers, W. M. (2004). Religiosity, alcohol expectancies, drinking motives and their interaction in the prediction of drinking among college students. *Journal of Studies on Alcohol*, 65(4), 469-476.
- George, W. H., & Stoner, S. A. (2000). Understanding acute alcohol effects on sexual behavior. *Annual Review of Sex Research*, 11, 92-124.
- Glenn, N. & Marquardt, E. (2001). Hooking Up, Hanging Out, and Hoping for Mr. Right: College Women on Dating and Mating Today. An Institute for American Values Report to the Independent Women's Forum.
- Gorsuch, R. L. (1995). Religious aspects of substance abuse and recovery. *Journal of Social Issues. Special Issue: Religious Influences on Personal and Societal Well-being*, 51(2), 65-83. doi:10.1111/j.1540-4560.1995.tb01324.x
- Hatzenbuehler, M. L., Corbin, W. R., & Fromme, K. (2008). Trajectories and determinants of alcohol use among LGB young adults and their heterosexual peers: Results from a prospective study. *Developmental Psychology*, 44, 81-90. doi:10.1037/0012-1649.44.1.81
- Leonard, K. E., & Rothbard, J. C. (1999). Alcohol and the marriage effect. *Journal of Studies on Alcohol. Special Issue: Alcohol and the Family: Opportunities for Prevention*, Supp13, 139-146.
- Maggs, J. L. (1997). Alcohol use and binge drinking as goal-directed action during the transition to postsecondary education. In: Schulenberg, J., Maggs, J.L. and Hurrelmann, K. (Eds.) *Health*

Risks and Developmental Transitions during Adolescence (pp.345-371), New York: Cambridge Univ. Press.

- Maisto, S. A., Carey, M. P., Carey, K. B., & Gordon, C. M. (2002). The effects of alcohol and expectancies on risk perception and behavioral skills relevant to safer sex among heterosexual young adult women. *Journal of Studies on Alcohol*, 63(4), 476-485.
- Nezlek, J. B., Pilkington, C. J., & Bilbro, K. A. (1994). Moderation in excess: Binge drinking and social interaction among college students. *Journal of Studies on Alcohol*, 55, 342-351.
- National Institute on Alcohol Abuse and Alcoholism (2002). High-Risk Drinking in College: What We Know and What We Need To Learn. *Final Report of the Panel on Contexts and Consequences, Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism*. Retrieved from http://www.collegedrinkingprevention.gov/Reports/Panel01/Panel01_TOC.aspx
- O'Malley, P. M., & Johnston, L. D. (2002). Epidemiology of alcohol and other drug use among college students. *Journal of Studies on Alcohol*, Supplement 14, 23-39.
- Owen, J. J., Rhoades, G. K., Stanley, S. M., & Fincham, F. D. (2010). "Hooking up" among college students: Demographic and psychosocial correlates. *Archives of Sexual Behavior*, 39(3), 653-663. doi:10.1007/s10508-008-9414-1
- Owen, J. & Fincham, F.D. (2011). Effects of gender and psychosocial factors on "Friends with Benefits" relationships among young adults. *Archives of Sexual Behavior*, 40, 311-320. doi:10.1007/s10508-010-9611-6
- Patrick, M. E., & Lee, C. M. (2010). Sexual motivations and engagement in sexual behavior during the transition to college. *Archives of Sexual Behavior*, 39(3) 667-681. doi:10.1007/s10508-008-9435-9
- Paul, E. L., & Hayes, K. A. (2002). The casualties of 'casual' sex: A qualitative exploration of the phenomenology of college students' hook ups. *Journal of Social and Personal Relationships*, 19(5), 639-661. doi:10.1177/0265407502195006
- Paul, E. L., McManus, B., & Hayes, A. (2000). "Hook ups": Characteristics and correlates of college students' spontaneous and anonymous

- sexual experiences. *Journal of Sex Research*, 37(1), 76-88.
doi:10.1080/00224490009552023
- Pedersen, E. R., Lee, C. M., Larimer, M. E., & Neighbors, C. (2009). Gender and dating relationship status moderate the association between alcohol use and sex-related alcohol expectancies. *Addictive Behaviors*, 34(9), 786-789.
doi:10.1016/j.addbeh.2009.04.015
- Perkins, H. W. (2002). Surveying the damage: A review of research on consequences of alcohol misuse in college populations. *Journal of Studies on Alcohol. Special Issue: College Drinking, What It Is, and What To do About It: Review of the State of the Science*, Suppl. 14, 91-100.
- Substance Abuse and Mental Health Services Administration. Office of Applied Studies. Rockville, MD: 2009. Results from the 2008 National Survey on Drug Use and Health: National Findings.
- Schulenberg, J., Wadsworth, K. N., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Adolescent risk factors for binge drinking during the transition to young adulthood: Variable- and pattern-centered approaches to change. *Developmental Psychology*, 32(4), 659-674. doi:10.1037/0012-1649.32.4.659
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics (5th ed.)*. Boston, MA: Allyn & Bacon/Pearson Education.
- Uecker, J. E. (2008). Religion, pledging, and the premarital sexual behavior of married young adults. *Journal of Marriage and Family*, 70(3), 728-744. doi:10.1111/j.1741-3737.2008.00517.x
- Vander Ven, T. & Beck, J. (2009). Getting drunk and hooking up: An exploratory study of the relationship between alcohol intoxication and casual coupling in a university sample. *Sociological Spectrum*, 29(5), 626-648. doi:10.1080/02732170903051417
- Wechsler, H., Davenport, A., Dowdall, G., & Moeykens, B. (1994). Health and behavioral consequences of binge drinking in college: A national survey of students at 140 campuses. *JAMA: Journal of the American Medical Association*, 272(21), 1672-1677.
doi:10.1001/jama.1994.03520210056032
- Wechsler, H., Dowdall, G., Davenport, A., & Rimm, E. (1995). A gender-specific measure of binge drinking among college students.

American Journal of Public Health, 85, 982–985.
doi:10.2105/AJPH.85.7.982

Wechsler, H., Lee, J. E., Kuo, M., Lee, H. (2000). College Binge Drinking in the 1990s: A Continuing Problem. *Journal of American College Health*, 48(5), 199-209. doi:10.1080/07448480009599305

Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts. *Journal of American College Health. Special Issue: Drinking on the College Campus*, 50(5), 203-217. doi:10.1080/07448480209595713

Weitzman, E. R., Nelson, T., Wechsler, H. (2003). Taking up binge drinking in college: the influences of person, social group, and environment. *Journal of Adolescent Health*, 1, 26-35.
doi:10.1016/S1054-139X(02)00457-3

Wills, T. A., Yaeger, A.M., & Sandy, J.M. (2003). Buffering effect of religiosity for adolescent substance use. *Psychology of Addictive Behaviors*, 17(1), 24-31. doi:10.1037/0893-164X.17.1.24

White, H. R., McMorris, B. J., Catalano, R. F., Fleming, C. B., Haggerty, K. P., & Abbott, R. D. (2006). Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: The effects of leaving home, going to college, and high school protective factors. *Journal of Studies on Alcohol*, 67, 810-822.

Zuckerman, M., Kuhlman, D. M., Teta, P., Joireman, J., & Kraft, M. (1993). A comparison of three structural models of personality: the big three, the big five, and the alternative five. *Journal of Personality and Social Psychology*, 65, 757–768. doi:10.1037/0022-3514.65.4.75

Table 1

Baseline Differences in Descriptive Statistics and Frequency Counts for Full Sample Providing Data During Freshman Fall, Those Who Were Eligible for Inclusion in Analysis 1, and the Sample Included in Analysis 2.

	Full Sample		Analysis 1		Analysis 2	
	M	SD	M	SD	M	SD
HED frequency (Time 1)	2.92	6.22	2.80	5.88	2.57	5.85
Sensation Seeking	5.55	2.68	5.51	2.67	5.38	2.62
Religious values	3.20	1.43	3.21	1.44	3.20	1.44
Religious attendance	.83	.94	.83	.92	.84	.96
	N	%	N	%	N	%
Gender						
Male	810	39.0	533	36.3	318	36.9
Female	1267	61.0	934	63.7	544	63.1
Sexual activity						
Active	858	42.9	613	41.8	524	61.6
Non-active	1142	57.1	854	58.2	338	38.4
Relationship status						
Single	874	43.3	678	46.2	435	50.5
Casually dating	358	17.7	280	19.1	137	15.9
Exclusive	615	30.4	509	34.7	290	33.6
Other/Multiple	172	8.5	----	----	----	----

Note. N's for full sample descriptives range from 2077 to 1992 due to missing data. Excluded participants for analysis 1 consist of students who were missing data on any of the above measures, did not provide data at time 2 or 3, or who reported other/multiple relationship statuses. Excluded participants for analysis 2 consist of those deleted due to status changes from times 2-3 or missing relationship status data for times 2 or 3. HED frequency is reported in actual drink units (as opposed to the logarithmical transformations) for the purposes of interpretation.

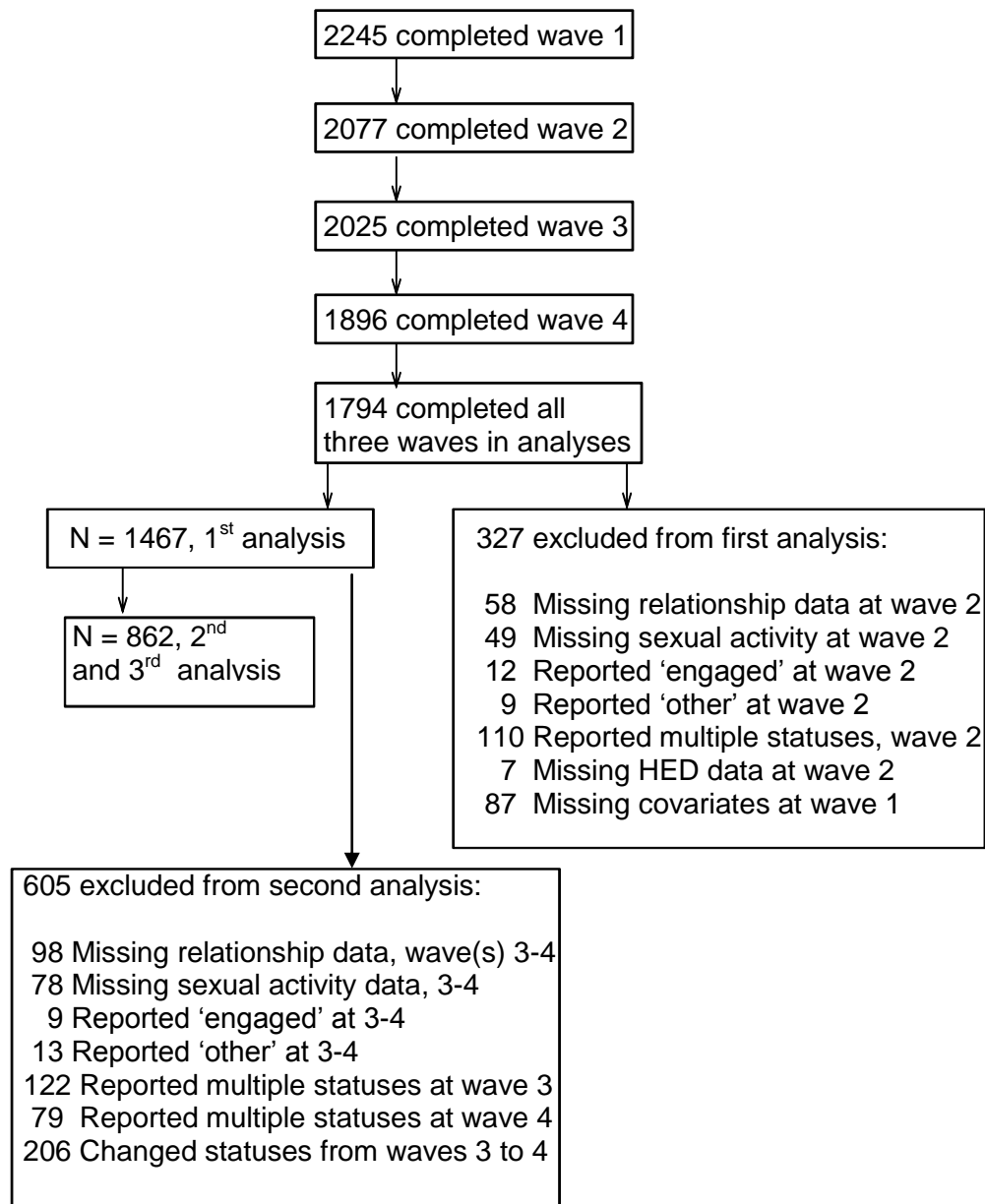


Figure 1. Flow chart illustrating participant enrollment, attrition, exclusion, and retention for analyses.

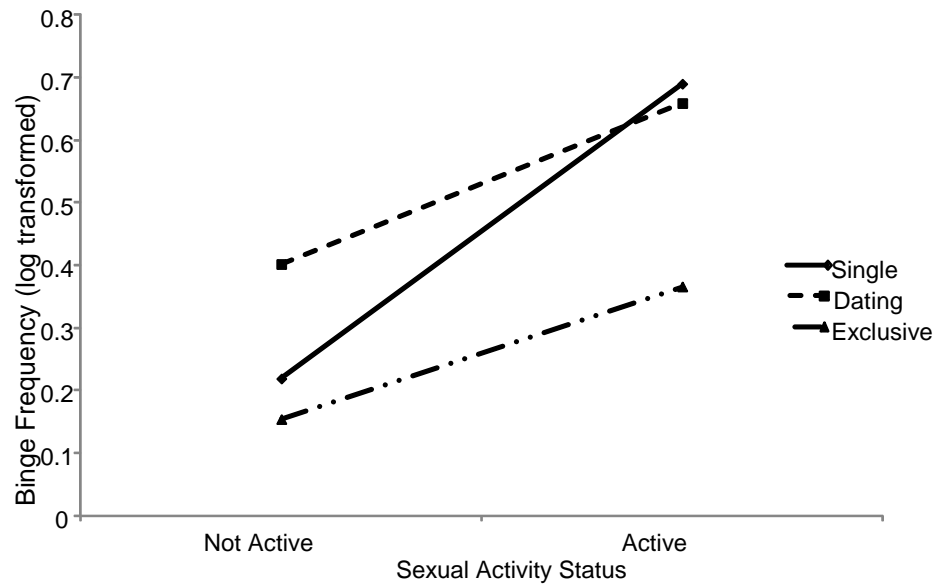


Figure 2. Heavy episodic drinking by levels of sexual activity and relationship status.

Note. Means reflect estimated marginal means controlling for gender, sensation-seeking, and religiosity.

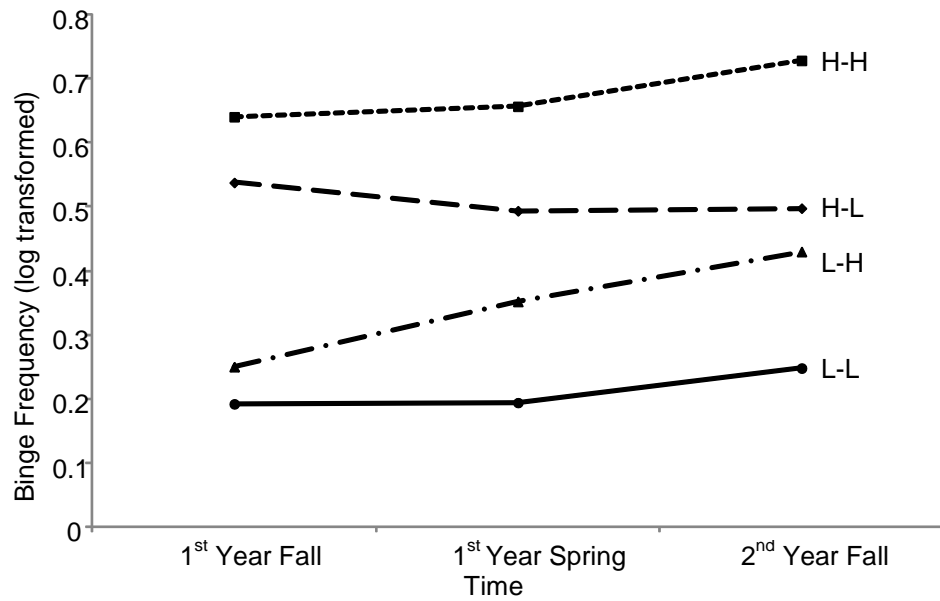


Figure 3. Heavy episodic drinking trajectories by relationship status transition classification.

Note. L-L = stably low risk , L-H = low to high risk, H-L = high to low risk, H-H = stably high risk. Means reflect estimated marginal means controlling for gender, sensation-seeking, and religiosity